

No. 688,311.

Patented Dec. 10, 1901.

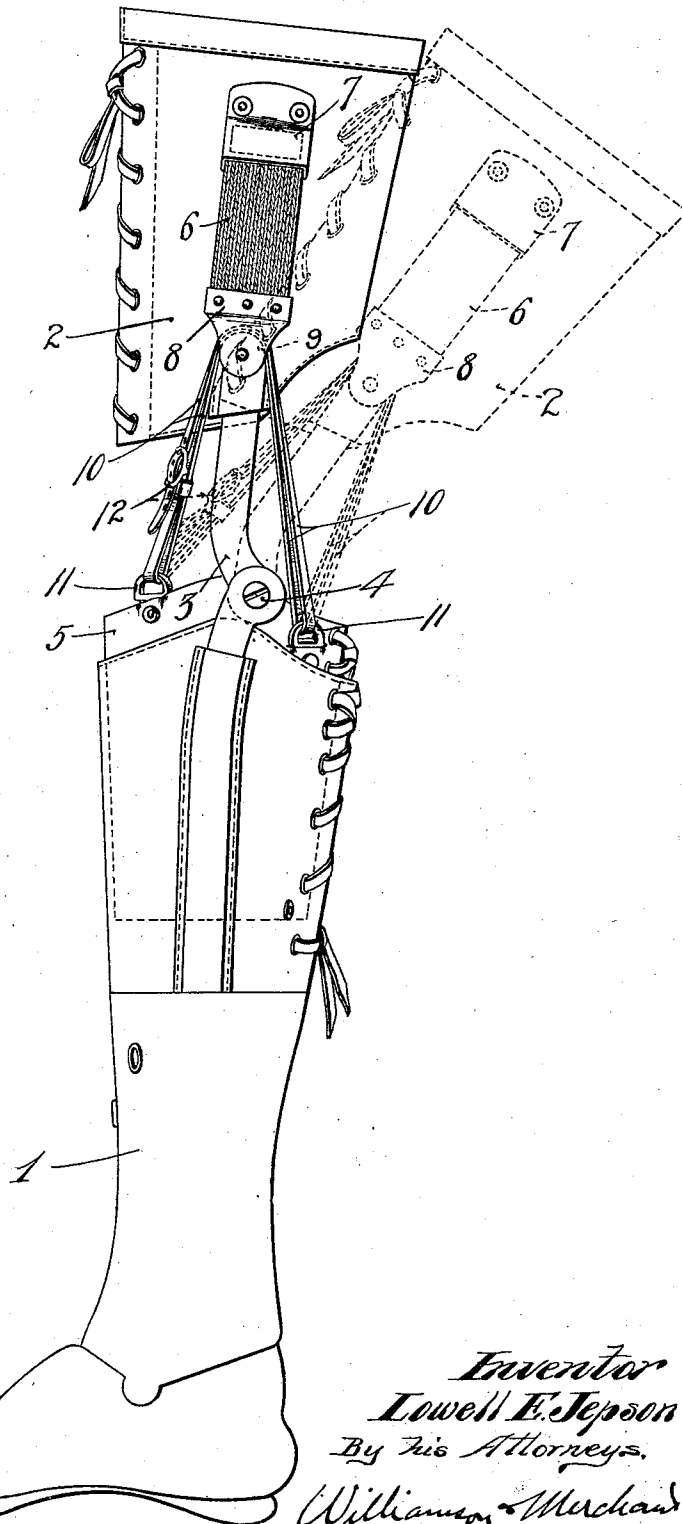
L. E. JEPSON.
ARTIFICIAL LIMB.

(Application filed Aug. 30, 1901.)

(No Model.)

3 Sheets—Sheet 1.

Fig. 1.



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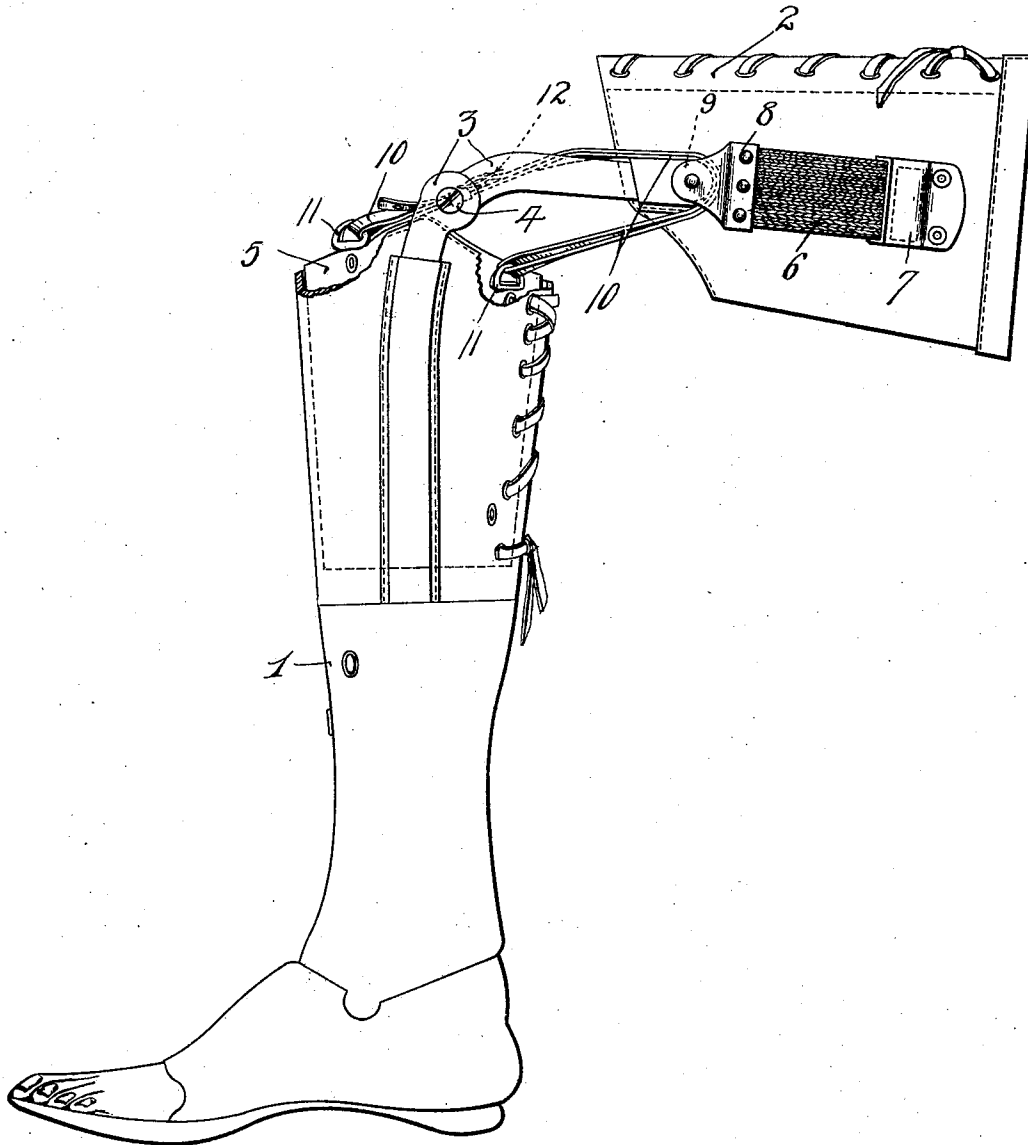
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Fig. 2.



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Fig. 3.

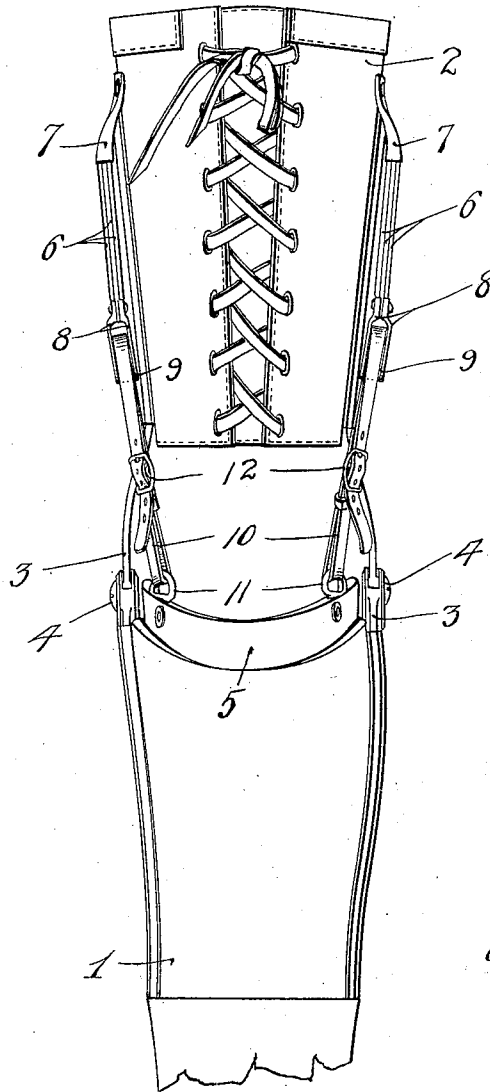
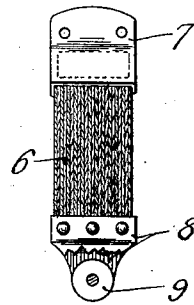


Fig. 4.



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UNITED STATES PATENT OFFICE.

LOWELL E. JEPSON, OF MINNEAPOLIS, MINNESOTA.

ARTIFICIAL LIMB.

SPECIFICATION forming part of Letters Patent No. 688,311, dated December 10, 1901.

Application filed August 30, 1901. Serial No. 73,767. (No model.)

To all whom it may concern:

Be it known that I, LOWELL E. JEPSON, a citizen of the United States, residing at Minneapolis, in the county of Hennepin and State of Minnesota, have invented certain new and useful Improvements in Artificial Limbs; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My present invention has for its object to provide an artificial leg having certain features of improvement hereinafter set forth; and to this end it consists of the novel devices and combinations of devices hereinafter described, and defined in the claims.

The invention is illustrated in the accompanying drawings, wherein like characters indicate like parts throughout the several views.

Figure 1 is a side elevation showing an artificial leg embodying my several features of improvement. Fig. 2 is a view corresponding to Fig. 1, but showing the leg bent at the knee, as will be the case when the wearer is seated. Fig. 3 is a front elevation of the leg, some parts being broken away; and Fig. 4 is a detail view, in side elevation, showing one of the elastic supporting-webs removed from working position and some parts thereof being broken away.

The numerals 1 and 2 indicate, respectively, the lower and upper leg-sections or socket-like members, which may be assumed to be of the ordinary construction, articulated at the knee-joint by metal straps or hinge-irons 3, the pivots or hinges 4 of which afford the knee-joint.

The numeral 5 indicates the so-called "slip-socket," which telescopes freely into the upper end of the lower leg-section 1 and is free for oscillations on its vertical axis.

Secured at each side of the upper leg-section 1 is a strong elastic webbing 6, preferably afforded by several plies or thicknesses of covered elastic. The upper ends of the elastic webbings 6 are shown as directly secured to the sides of the upper leg-section 2 by means of clips or keepers 7. At their lower free ends the webbings 6 are provided with metal clips 8, having depending ears between which antifriction-rollers 9 are pivotally mounted.

Flexible suspending-straps 10 work freely over the said rollers 9, and the depending ends thereof are secured by eyelets 11 to the upper portion of the slip-socket 5. These suspending-straps 10 are doubled, so that they are passed through the eyes 11, and to make the same adjustable, so as to compensate for stretching of said straps or webbings, they are provided with buckles 12. The eyelets 11, to which a particular strap 10 is connected, are located one at the front and one at the rear of the knee-joint or hinge 4.

With the suspending devices for the slip-socket above described said slip-socket is supported with freedom for oscillations on its vertical axis, and the antifriction supporting rollers or guides 9 permit the straps 10 to freely move to permit this movement of the socket. This free oscillation of the socket on its vertical axis is of the greatest importance and gives the artificial leg a torsional flexibility which is almost identical with that of the natural leg. To illustrate the importance of this torsional or twisting flexibility of the leg, suppose a fireman on a locomotive be shoveling coal from the tender into the fire-box, which requires a swinging movement of the body. With an artificial leg as ordinarily constructed this swinging movement of the body will cause the foot of the artificial leg to swing or slip over the floor, thus putting very undesirable strains on the leg-stump. However, with my improved leg this swinging movement of the body will simply cause the slip-socket to turn within the lower leg-section, it being understood, of course, that the thigh portion of the crippled leg is free to turn within the upper leg-section or socket 2.

From the above illustrations it becomes evident that the antifriction-rollers are required in order to insure at all times the free movements of the supporting-straps 10 and that these free movements of the straps are necessary in order to secure the proper results.

By reference to Figs. 1 and 2 it will be noted that when the knee is bent, as indicated in said Fig. 2, the slip-socket 5 is permitted to lower into the lower leg-section and with respect to the knee-pivot 4, this movement being due to the fact that slack is given to the suspending-straps 10. This receding or down-

ward movement of the slip-socket 5 loosens the same from the leg-stump, and thus relieves the said leg-stump from pressure while the wearer is seated or while the knee is bent, as indicated. As the straps 10 run freely on the rollers 9, the webbings 6 will not be pulled out of the direct line of strain or out of the position relative to the upper leg-section indicated in the drawings. In walking the weight of the body is of course taken by the flexible webbings 6. In the walking action the rollers 9, as is evident, offer a minimum of resistance to the knee-joint movement of the leg. Hence these rollers for this reason, as well as others mentioned, are important factors.

What I claim, and desire to secure by Letters Patent of the United States, is as follows:

1. In an artificial leg, the combination with upper and lower leg-sections articulated at the knee-joint, of a slip-socket telescoping into said lower leg-section, strap-supporting rollers carried by said upper leg-section, and suspending-straps working over said rollers, each strap having one end connected to said slip-socket at the front and the other at the rear of the knee-joint, whereby, when the knee is bent, said suspending-straps are relieved of strain, said slip-socket is permitted to lower and the leg-stump is relieved from pressure, substantially as described.

2. In an artificial leg, the combination with upper and lower leg-sections articulated at the knee-joint, of a slip-socket telescoping into the lower leg-section, elastic supporting-webs secured on the sides of the upper leg-section and having strap-supporting rollers at their free, lower end, and adjustable supporting-straps working freely over said rollers, the ends of each strap being connected to said slip-socket, one at the front and the other at the rear of the knee-joint, substantially as described.

3. In an artificial leg, the combination with upper and lower leg-sections articulated at the knee-joint, of a slip-socket telescoping into the lower leg-section and provided with the eyelets 11, elastic supporting-webs 6, secured on the sides of the upper leg-section and having strap-supporting rollers at their ends, and the double and adjustable supporting-straps 10 working freely over said rollers and passed through the eyelets 11 on said slip-socket, said parts operating substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

LOWELL E. JEPSON.

Witnesses:

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